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AUTHOR Korth, Stephanie H.; Wurster, Stanley R.
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ABSTRACT

An ESEA Title III project, the Outdoor Laboratory and Community Nature Center was conceived, planned and implemented within a three year period (1974-77). During the first year, which was primarily a planning year, specialists in various areas related to environmental studies were consulted. The project director traveled considerably to observe functioning nature centers and to collect relevant information. Local and community support and involvement was established for constructing the facility and developing a curriculum using an interdisciplinary approach for grades 1-12. During the second year, the primary concern was to construct the facility, increase community involvement, provide workshops for teachers in environmental education, and begin to bring students to the Center. The third year the project reached full implementation with a well-developed facility, a trail-guide book, increased community and visitor involvement, a developed curriculum, teachers well educated in environmental studies, and intense student involvement. Intended to be used directly in connection with classroom activities and lessons, the curriculum included Center activities and related school activities for the fall and spring. This report summarizes the results of the efforts during the three years the program has been in existence, and includes an example of the activities planned for grades 3 and 4. (Author/NQ)

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OUTDOOR LABORATORY
AND
COMMUNITY NATURE CENTER

BY

STEPHANIE H. KORTH
RESEARCH/EVALUATION ASSOCIATE

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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AND

DR. STANLEY R. WURSTER
ASSOCIATE PROFESSOR
ARIZONA STATE UNIVERSITY

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OUTDOOR LABORATORY

AND

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INTRODUCTION

A growing concern of the American culture, national and local governments, ecologist groups, and educators is the environment. The intricate balance between man and his activities and the environment has increasingly demanded attention.

Several contributing factors are: energy shortages, depletion of natural resources, increased population, and ever-expanding technologies. To maintain a balance and preserve or conserve the environment, an awareness of all aspects of nature and the delicate interrelationships of each area to the other and to the whole is mandatory. Although awareness is essential, it alone will not be sufficient to create and maintain the most effective, natural environmental conditions. Specific knowledge of existing conditions and an ability to project future results is required if action is to be taken. Plans for action must be well organized, researched and tested before implementation is warranted. This presents an enormous task to those educators whose goal it is to attend to this growing concern.

The public schools in Prescott, Arizona, and many involved community members had the foresight to develop a Community Nature Center and Outdoor Laboratory in which environmental education could receive impetus.

In pursuing this challenge, the Prescott School District, with the help of an ESEA Title III grant, sought to plan, develop, and implement an innovative program. They reserved a 20 acre section of rugged pinon-fringed hills and

juniper-dotted grassland for an outdoor learning center. This report summarizes the results of these efforts during the three years the program has been in existence: 1974 - 1977.

PROGRAM DESCRIPTION

In constructing the Outdoor Laboratory and Community Nature Center in Prescott, the key word realized by the Project Director, Dr. Henry Dahlberg, and the Prescott School District was "involvement". From the moment the project was under construction, through its present status, representatives of every age and occupation have been actively involved. If the environment is to be sensitively and knowledgeably understood, it is essential for everyone to be physically involved. An additional realization of the Prescott project was that the children must be a primary target for environmental education if the future is, indeed a primary concern. The community, with all its resources must be involved as a context in which learning takes place.

In order for children to become knowledgeable of the environment, those that teach them must be knowledgeable. Thus the training of teachers in environmental outdoor education became an essential component. The teachers, while broadening their personal knowledge of the environment, also gained awareness that curriculum must, in fact, be amalgamative; that learning isolated bits of information or subjects is not the most beneficial method. The project, therefore, added the component of curriculum development.

To construct a facility conducive to the enrironmental education of elementary and secondary school students; to develop amalgamative curriculum materials usable in the classroom as well as the nature center; and to provide the community with a natural reserve were the primary purposes behind the development of

the Prescott Outdoor Laboratory and Community Nature Center.

GOALS AND OBJECTIVES

The basic goals of this Title III project were: to develop an outdoor laboratory and nature center for use of schools and the community which would provide facilities; to increase scientific understanding of conservation and ecology, and the vocational implications of these fields of study; to offer an interdisciplinary approach to environmental education involving students, teachers, and community members emphasizing the development of awareness, respect, and understanding of the environment through participatory activities.

The project, in pursuing the above goals, sought to achieve the following objectives:

During the 1974-1975 project year the two objectives were as follows:

Objective 1.1: By June, 1975, the project will develop plans and characteristics for an outdoor laboratory and nature center for use by students and members of the community.

Objective 1.2: By June, 1975 the present curriculum shall be analyzed and basic curriculum goals (objectives) formulated. This shall be done in several disciplines appropriate to an outdoor laboratory and nature center.

In pursuit of these two objectives many activities were accomplished.

Government and state agencies, the Forest Service, U.S. Weather Bureau, marine and fresh water biologists, nurserymen, agricultural agents, and landscape architects served as consultants for various areas of specialization.

Local youth organizations, city and county agencies, school faculties, and community members were consulted as to their needs, potential involvement, recommendations and local dissemination.

The Project Director traveled to various outdoor learning centers and visited arboretums to collect data relevant to suitable species, suitable types of feeders, and fresh water ponds.

Teachers were selected to conduct curriculum analysis. They developed curriculum objectives attainable through use of the Outdoor Learning Center and with the aid of the Project Director gathered and analyzed environmental education curriculum. Books, periodicals, and curriculum materials were purchased.

The first year of the Prescott Outdoor Laboratory and Community Nature Center was primarily a planning year. Substantial ground work was established for constructing the facility, involving community members, students, and teachers, and developing a curriculum using an interdisciplinary approach.

The second project year, 1975-1976, saw continued development and implementation of many project components. The two major objectives for this year were as follows:

Objective 1.1: By June 30, 1976, the Outdoor Laboratory and Community Nature Center planned during the 1974-1975 project year will be constructed and implemented for student, teacher and community use.

Objective 1.2: By June 30, 1976, curriculum emphasizing an interdisciplinary approach will be developed for each grade level in environmental education and integrated into the existing curriculum.

Construction and implementation took place at a rapid pace during the second project year. An amphitheater was built at the Center. The entire area encompassing the Center was fenced, and a network of trails and trail markers were constructed to provide access to the different areas. Guidebooks were written and color-coded to match the numbered wooden markers on the trails. These call attention to underground animal nests, decayed and weathering rocks, and provide a detailed study of plants of the area's many species.

Some acreage was, however, maintained in a strict preservation setting. Only plants typical to the area were introduced, and they were planted only to decrease land erosion where construction had occurred.

A log cabin was built primarily by students in the Youth Employment Program, and a log fence built around it. Water was piped in, and a clay bottom fresh water pond built. Land for a school garden was selected and the garden planted.

The Center was introduced to the community members through tours of the site. Garden clubs and civic groups met at the Center. Comprehensive planning was employed to involve all parts of the community. Information about the Center was disseminated through local newspapers and brochures.

Workshops were provided for teacher training in the area of environmental education. Faculty members developed a flexible progression of activities suitable for each grade level, reinforcing skills for several areas of the curriculum.

Curriculum materials of the Community Nature Center program were purchased. A variety of group activities from the Arizona Environmental

Education Guide were used. Student involvement at the Center increased significantly. Several classes were involved in work study projects. These classrooms did conservation or reforestation work on the Ruth Burn. Students and teachers had an opportunity to learn orienteering.

The second project year was indeed an implementation year. The construction of trails, the cabin, the amphitheater, and the garden made the Center accessible to students, teachers, and community members. Curriculum materials in science and environmental education designed by the teachers were used with elementary classes visiting the Center. Related activities to be used at a school site were also included. The Center was used by teachers enrolled in the Environmental Education extension class. Additionally, a survey of end, 4th, and 6th grade students' activities toward school before and after involvement with the Center was conducted on a pilot basis.

The third project year, 1976-1977, showed increased development and growth of the Community Nature Center. The objectives for this year were as follows:

Objective 1.1: By June 30, 1977, Environmental Education activities will be integrated into the existing curriculum using as interdisciplinary approach.

Objective 1.2: The Community Nature Center will serve as an educational and research facility fostering an understanding and appreciation of the natural history of Northern Arizona, by June 30, 1977.

During the third year of project operation several new items were constructed at the site. A solar hot water heater was constructed near the cabin to serve as an experiment and also fill the functional

needs of students to wash their hands prior to lunch. A fireplace was built in the cabin, and a barbeque was built by students behind the cabin. The school garden was planted with jobs and responsibilities delegated to students. The Upper Loop Trail was paved for use by handicapped citizens. In addition, a solar heated green house was constructed by students at a school site.

The Range Management Society and Arizona Nursery Men used the Center for plant identification days.

Garden clubs and civic groups had meetings at the Center.

Teachers conducted an In-service Day workshop for fellow elementary school teachers. Secondary teachers also attended an In-service Day workshop at the Nature Center. Environmental living programs were conducted at the Center. Curriculum materials were developed consisting of a flexible progression of activities for the school site and Center suitable for each grade level. School camping was also continued during the third project year.

The survey of 2nd and 4th grade students' attitudes toward school before and after involvement with the Center was conducted again this year. Second grade students participating in CNC related activities displayed better attitudes in the contents areas of science, mathematics, and reading/language.

The third year the Prescott Outdoor Laboratory and Community Nature Center saw many aspirations brought to fruition. Elementary classes' use of the facility greatly increased. The Project Director gave a conservative approximation that twelve to fifteen hundred (1200 to 1500) students have used the Center. He further estimated that seventy (70) teachers in

Prescott Schools took the Environmental Education extension class. Community use and the number of visitors through the Center also increased. The fourth grade class from one of the district schools participated in school camping at the Sky Y camp. The Dicotomous key, identifying all the vegetation in the woodland area, was completed. The curriculum guide was further developed and used to a greater extent by elementary teachers. Large scale dissemination was achieved through the article about the Outdoor Laboratory and Community Nature Center in the June, 1977, issue of Arizona Highways.

At the end of the third project year, June 30, 1977, the Prescott laboratory and Community Nature Center reached a successful completion. The two project objectives stated previously were achieved as evidenced by the completion of the various project components.

CURRICULUM

The curriculum developed for use with the Community Nature Center and environmental education was intended to be used directly in connection with classroom activities and lessons. All teachers were encouraged to bring their classes to the Center and creatively conduct lessons dealing with a variety of subject areas. The teachers taking the university extension course in Environmental Education developed a basic curriculum guide for first grade through high school. The guide for grades 1 through 6 presents Community Nature Center activities and related school site activities for the fall and activities for the spring. The activities are sequential and developmental. Major activities are not repeated and any overlap is intended for reinforcement and review. Separate activities, fall and spring, are designated for junior high. The high school guide does not designate grade level and presents fall and spring activities for all grades combined.

An example of the curriculum guide follows: The example will contain activities planned for third grade and those for fourth grade.

THIRD GRADE

Fall

Community Nature Center Activities:

Outdoor Biology Instructional Strategies Activities (OBIS)

Gaming in the Outdoors - This activity is two games that acquaint youngsters with the plants, animals, and environmental conditions of a new area and reinforce observations made in previous investigations of the environment.

Seed Dispersal - Children are asked to look at the plants in their surroundings, decide how each plant disperses seeds, and glue or tape a sample of its seed in the proper box. Some seeds may be dispersed in more than one way. The first person with five seeds in a row, in any direction, wins. (same as bingo)

National Wildlife Federation Activities (NWF)

Bur-In Field Trip - Pick an area, an empty lot, and take the children there. Have children collect one sample of as many different kinds of plants which produce bur or sticky seeds as they can find.

Science Curriculum Improvement Activitires (SCiS)

Life Cycles - Children are taught about life cycles in nature by doing experiments and finding answers to their questions.

School Site Activities:

Birds and Worms

National Wildlife Federation Activities

Oats, Acorns, Climates, and Squirrels - Children through experiments that they do, learn different types of oak trees and the relationship of the acorns to the oaks. They also learn how the climate affects the other trees and squirrels and acorns.

Plants in the Classroom - Using six different types of plants, children are given the chance to grow plants in the classroom using different experiments. They watch them grow, or watch them die, and find out why.

Cricket - p.16 in Fish and Water Temp.

Children learn about crickets by catching them and studying them and even keeping them as pets.

Audubon Aids Activities:

The Terrarium - Children are taught how to build and care for a terrarium.

Science Curriculum Improvement Study Activities

Communities - Light source construction could be adopted for classroom light source when one is needed for growing plants in class. Also for organisms.

Spring

Community Nature Center Activities:

National Wildlife Federation Activities

Plant Puzzles - Plant Puzzles aim to familiarize children with patterns in nature. To accomplish this, children inspect a number of branches. They will examine the external patterns, structures and characteristics, as well as the internal pattern of the stem.

Through these activities, some of the relationships between external characteristics and internal patterns will become apparent.

Invent an Animal - Children are asked to invent an imaginary animal that is camouflaged from its enamies by blending into its habitat. Make a model of the animal, hide the animal in an area, and let other children find it.

School Site Activities:

Audubon Aids Activities

Plant Growth and Propagation in the Classroom - Children are taught how to care for and grow their own plants indoors.

National Wildlife Federation Activities:

Title Patterns and Graphs - p.10 - Children are told about different sampling techniques and different things to be sampled, like counting the steps it takes to get to school, or sampling children's heights.

FOURTH GRADE

Fall

Community Nature Center Activities:

Outdoor Biology Instructional Strategies Activities (OBIS)

Animals in Grassland - Children are asked to find as many different kinds of animals in a lawn as possible. They learn new ways to find them, and discover many new things.

National Wildlife Federation Activities (NWF)

What's in a Goldenrod - Use Oak Galls - (to be used in conjunction

with Animals in Grasslands) - With experiments, the children are shown how to find out what is inside of an Oak Gall.

School Site Activities:

Food Chain

Audubon Aids Activities

Ecosystems

Outdoor Biology Instructional Strategies Activities (OBIS)

Little Critter Wheels - With the help of wheels provided, children are asked to find bugs and make them with the wheels, learning about the different parts of the bugs and then creating their own.

Spring

Community Nature Center Activities:

Plant Garden

Outdoor Biology Instructional Strategies Activities (OBIS)

Invent a Plant - This activity will enable participants to recognize that plants, as well as animals, are uniquely suited to their habitats. Using imagination and some craft materials, youngsters construct models of plants that are "adapted" to survive under specified environmental conditions.

Moisture Makers - Children are shown how to measure the moisture released from different kinds of leaves by observing the color change of cobalt chloride paper.

National Wildlife Federation Activities (NWF)

A Field of Insects - The children are taken out and told to catch different kinds of insects. Then they are taught how to tell what

kinds they are and more information about them, and then they mount their collections.

School Site Activities:

Compass Point Exercise

Clay Modeling Contouring

The development of this environmental education curriculum is an ongoing process. At the present time revisions and additions are being worked on. The interdisciplinary approach is also the basic format for the new developments. The curriculum is intended to provide a foundation of ideas from which the creative teacher can work.

CONCLUDING COMMENTS

The Outdoor Laboratory and Community Nature Center in Prescott, Arizona was conceived, planned and implemented within a three year period.

The first year was primarily a planning year, in which specialists, in a variety of areas related to environmental studies, were consulted; considerable travel was made by the Project Director to observe functioning nature centers and to collect relevant information; and local and community support and involvement was established.

During the second project year the primary concern was to construct the facility, increase involvement from the community, provide workshops for teachers in environmental education, and begin to bring students to the Center.

The third project year the project reached full implementation with a well-developed facility, a trail-guide book, increased involvement of community members and visitors, a developed curriculum, teachers well educated in environmental studies, and intense student involvement.

At a point in time when not only concern but action directed toward a preservation and perpetuation of the earth's environment is crucial, it is encouraging to find such conscientious individuals as those involved in the Presoctt Outdoor Laboratory and Community Nature Center. This Center provides a haven for nature lovers and an educational outdoor environment for students. Incorporation of environmental education into all areas of study is essential if man is to live in health and harmony on this planet.